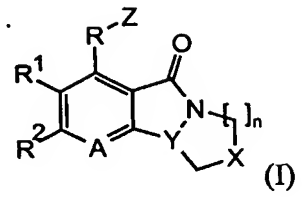
What is claimed is:

1. A compound of formula (I):



(I)

including salts, solvates, and pharmaceutically functional derivatives thereof,

wherein

R is aryl, heteroaryl, alkyl, or cycloalkyl,

further wherein said aryl, heteroaryl, alkyl, or cycloalkyl may be optionally substituted with one or more of alkyl, halogen, nitro, or trifluoromethyl;

Z is H, alkyl, halogen, $C(O)OR^5$, $C(O)N(R^5)_2$, $C(O)NHN(R^5)_2$, $NHC(O)N(R^5)_2$, $S(O)_2N(R^5)_2$, $CH_2NHC(O)R^5$, NO_2, $N(R^5)_2$, $NHC(O)R^5$, $N(R^5)S(O)_2N(R^5)_2$, OR^5, $CH_2N(R^5)_2$, $CH_2C(O)N(R^5)_2$, $CH_2C(O)OR^5$, heteroaryl, said heteroaryl optionally may be substituted with alkyl or aralkyl;

each occurrence of R^5 independently is H, alkyl, trifluoromethyl, aryl, heteroaryl, aralkyl, heteroaralkyl, cycloalkyl, heterocyclyl, fused cycloalkylaryl, or fused heterocyclylaryl

further wherein said aryl, heteroaryl, aralkyl, heteroaralkyl, cycloalkyl, or heterocyclyl may be substituted with one or more halogen;

R^1 is H, alkyl, $C(O)OR^5$, $C(O)R^5$, $CON(R^5)_2$, CN, NO_2, $N(R^5)_2$, $S(O)_2R^5$, $S(O)_2N(R^5)_2$, $NHC(O)R^5$, $NHC(O)N(R^5)_2$,

further wherein R^5 is as defined above;

R^2 is alkyl, trifluoromethyl, alkoxy, aryl, heteroaryl, aralkyl, heteroaralkyl, alkoxyaryl,

further wherein said alkyl, aryl, heteroaryl, aralkyl, and heteroaralkyl may be substituted with one or more of halogen, trifluoromethyl, or alkoxy;

or

R^1 and R^2 combine to form a 5- or 6-membered ring, optionally containing one or more heteroatom, optionally containing one or more degrees of unsaturation, and optionally substituted one or more times with oxo, hydroxy, halogen, alkyl, aryl, heteroaryl, aralkyl, heteroaralkyl, further wherein said alkyl, aryl, heteroaryl, aralkyl, and heteroaralkyl may be substituted with one or more of halogen, trifluoromethyl, or alkoxy;

A is C or N;

Y is C or N;

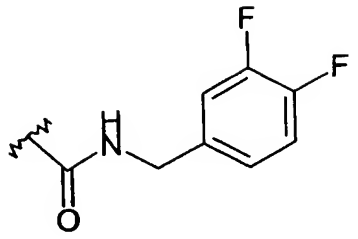
X is S, O, $N(R^5)$, $C(R^5)_2$, $S(O)_2$; and

n is 1, 2, 3, or 4.

2. The compound of claim 1 wherein R is thiophenyl.

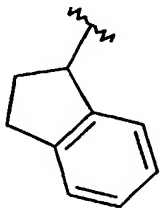
3. The compound of claim 1 wherein Z is $-C(O)N(R^5)_2$, wherein one R^5 is H and one R^5 is aralkyl substituted with one or more halogen.

4. The compound of claim 3 wherein Z is



5. The compound of claim 1 wherein Z is $-C(O)N(R^5)_2$, wherein one R^5 is H and one R^5 is a fused cycloalkylaryl.

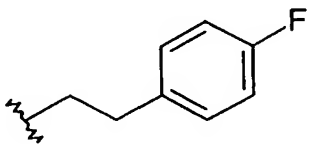
6. The compound of claim 5 wherein said fused cycloalkylaryl is



7. The compound of claim 1 wherein R^1 is $-C(O)OR^5$, wherein R^5 is ethyl.

8. The compound of claim 1 wherein R^2 is aralkyl substituted with one or more halogen.

9. The compound of claim 6 wherein R^2 is



10. The compound of claim 1 wherein Y is C.

11. The compound of claim 10 wherein the stereocenter is in the *S* configuration.

12. The compound of claim 1 wherein X is $-C(R^5)_2-$, wherein each R^5 is H.

13. The compound of claim 1 wherein n is 1.

14. The compound of claim 1 wherein the compound is selected from the group consisting of:

Ethyl 2-[2-(4-fluorophenyl)ethyl]-4-(4-{[(2-furylmethyl)amino]carbonyl}phenyl)-5-oxo-8,9-dihydro-5H,7H-pyrazolo[1',2':1,2]pyrazolo[3,4-b]pyridine-3-carboxylate;

Ethyl 2-[2-(4-fluorophenyl)ethyl]-4-(5-{[(2-furylmethyl)amino]carbonyl}-2-thienyl)-5-oxo-8,9-dihydro-5H,7H-pyrazolo[1',2':1,2]pyrazolo[3,4-b]pyridine-3-carboxylate;

Ethyl (9a*S*)-5-oxo-4-[4-({[(1*R*)-1-(4-pyridinyl)ethyl]amino}carbonyl)phenyl]-2-{2-[4-(trifluoromethyl)phenyl]ethyl}-7,8,9,9a-tetrahydro-5*H*-pyrido[2,3-*a*]pyrrolizine-3-carboxylate;

Ethyl(9aS)-4-(4-{[(2-furylmethyl)amino]carbonyl}phenyl)-5-oxo-2-{2-[4-(trifluoromethyl)phenyl]ethyl}-7,8,9,9a-tetrahydro-5*H*-pyrido[2,3-a]pyrrolizine-3-carboxylate;

Ethyl(9a*S*)-4-{4-[(2,3-dihydro-1*H*-inden-1-ylamino)carbonyl]-2-thienyl}-2-[2-(4-fluorophenyl)ethyl]-5-oxo-7,8,9,9a-tetrahydro-5*H*-pyrido[2,3-a]pyrrolizine-3-carboxylate;

Ethyl(9a*S*)-4-(4-{[(3,4-difluorobenzyl)amino]carbonyl}-2-thienyl)-2-[2-(4-fluorophenyl)ethyl]-5-oxo-7,8,9,9a-tetrahydro-5*H*-pyrido[2,3-a]pyrrolizine-3-carboxylate;

Ethyl(9a*S*)-4-{4-[(2,3-dihydro-1*H*-inden-1-ylamino)carbonyl]-2-furyl}-2-[2-(4-fluorophenyl)ethyl]-5-oxo-7,8,9,9a-tetrahydro-5*H*-pyrido[2,3-a]pyrrolizine-3-carboxylate;

Ethyl(9a*S*)-4-(5-{[(1*R*)-*2*,3-dihydro-1*H*-inden-1-ylamino]carbonyl}-2-thienyl)-2-[2-(4-fluorophenyl)ethyl]-5-oxo-7,8,9,9a-tetrahydro-5*H*-pyrido[2,3-a]pyrrolizine-3-carboxylate;

Ethyl (9a*S*)-4-(5-{[(1*R*)-2,3-dihydro-1*H*-inden-1-ylamino]carbonyl}-1,3-thiazol-2-yl)-2-(4-fluorobenzyl)-5-oxo-7,8,9,9a-tetrahydro-5*H*-pyrido[2,3-a]pyrrolizine-3-carboxylate;

4-{(9a*S*)-2-(2,4-difluorobenzyl)-5-oxo-3-[(trifluoroacetyl)amino]-7,8,9,9a-tetrahydro-5*H*-pyrido[2,3-*a*]pyrrolizin-4-yl}-*N*-[(1*R*)-2,3-dihydro-1*H*-inden-1-yl]benzamide;

Ethyl (9a*S*)-4-[4-({[2-(1*H*-imidazol-5-yl)ethyl]amino}carbonyl)phenyl]-5-oxo-2-{2-[4-(trifluoromethyl)phenyl]ethyl}-7,8,9,9a-tetrahydro-5*H*-pyrido[2,3-*a*]pyrrolizine-3-carboxylate;

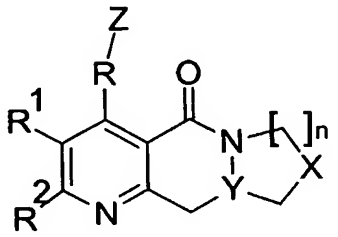
and

Ethyl (9a*S*)-4-(4-{[(1*R*)-2,3-dihydro-1*H*-inden-1

-ylamino]carbonyl}phenyl)-2-(4-methylpentyl)-5-oxo-7,8,9,9a-tetrahydro-5*H*-pyrido[2,3-*a*]pyrrolizine-3-carboxylate.

15. The compound of claim 1 substantially as hereinbefore defined with reference to the Examples.

16. A compound of formula (II):



(II)

including salts, solvates, and pharmaceutically functional derivatives thereof, wherein

R is aryl, heteroaryl, alkyl, or cycloalkyl,

further wherein said aryl, heteroaryl, alkyl, or cycloalkyl may be optionally substituted with one or more of alkyl, halogen, nitro, or trifluoromethyl;

Z is H, alkyl, halogen, $C(O)OR^5$, $C(O)N(R^5)_2$, $C(O)NHN(R^5)_2$, $NHC(O)N(R^5)_2$, $S(O)_2N(R^5)_2$, $CH_2NHC(O)R^5$, NO_2, $N(R^5)_2$, $NHC(O)R^5$, $N(R^5)S(O)_2N(R^5)_2$, OR^5, $CH_2N(R^5)_2$, $CH_2C(O)N(R^5)_2$, $CH_2C(O)OR^5$, heteroaryl, said heteroaryl optionally may be substituted with alkyl or aralkyl;

each occurrence of R^5 independently is H, alkyl, trifluoromethyl, aryl, heteroaryl, aralkyl, heteroaralkyl, cycloalkyl, heterocyclyl, fused cycloalkylaryl, or fused heterocyclylaryl

further wherein said aryl, heteroaryl, aralkyl, heteroaralkyl, cycloalkyl, or heterocyclyl may be substituted with one or more halogen;

R^1 is H, alkyl, $C(O)OR^5$, $C(O)R^5$, $CON(R^5)_2$, CN, NO_2, $N(R^5)_2$, $S(O)_2R^5$, $S(O)_2N(R^5)_2$, $NHC(O)R^5$, $NHC(O)N(R^5)_2$,

further wherein R^5 is as defined above;

R^2 is alkyl, trifluoromethyl, alkoxy, aryl, heteroaryl, aralkyl, heteroaralkyl, or alkoxyaryl,

further wherein said alkyl, aryl, heteroaryl, aralkyl, and heteroaralkyl may be substituted with one or more of halogen, trifluoromethyl, or alkoxy;

Y is C or N;

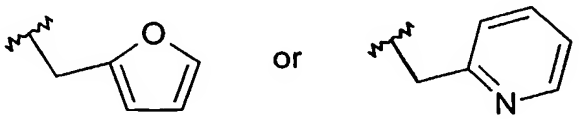
X is S, O, $N(R^5)$, $C(R^5)_2$, $S(O)_2$; and

n is 1, 2, 3, or 4.

17. The compound of claim 16 wherein R is phenyl.

18. The compound of claim 16 wherein Z is $-C(O)N(R^5)_2$, wherein one R^5 is H and one R^5 is heteroaralkyl.

19. The compound of claim 18 wherein the heteroaralkyl is selected from

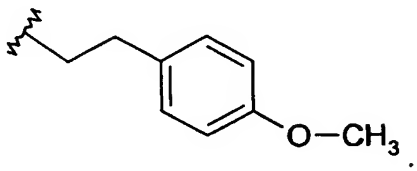


20. The compound of claim 16 wherein R^1 is $-C(O)OR^5$, wherein R^5 is ethyl.

21. The compound of claim 16 wherein R^2 is aralkyl.

22. The compound of claim 21 wherein said aralkyl is substituted with alkoxy.

23. The compound of claim 22 wherein R^2 is



24. The compound of claim 16 wherein Y is C.

25. The compound of claim 16 wherein X is $-C(R^5)_2-$, wherein each R^5 is H.

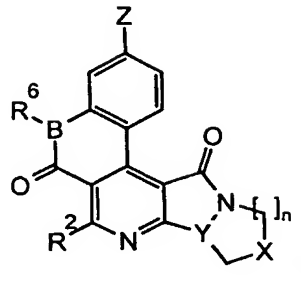
26. The compound of claim 16 wherein n is 1.

27. The compound of claim 16 wherein the compound is

Ethyl (9a*S*)-2-[2-(4-methoxyphenyl)ethyl]-5-oxo-4-(4-{[(2-pyridinylmethyl)amino]carbonyl}phenyl)-5,7,8,9,9a,10-hexahydropyrrolo[1,2-*g*][1,6]naphthyridine-3-carboxylate.

28. The compound of claim 16 substantially as hereinbefore defined with reference to the Examples.

29. A compound of formula (III):



(III)

including salts, solvates, and pharmaceutically functional derivatives thereof, wherein

Z is H, alkyl, halogen, $C(O)OR^5$, $C(O)N(R^5)_2$, $C(O)NHN(R^5)_2$, $NHC(O)N(R^5)_2$, $S(O)_2N(R^5)_2$, $CH_2NHC(O)R^5$, NO_2, $N(R^5)_2$, $NHC(O)R^5$, $N(R^5)S(O)_2N(R^5)_2$, OR^5, $CH_2N(R^5)_2$, $CH_2C(O)N(R^5)_2$, $CH_2C(O)OR^5$, heteroaryl, said heteroaryl optionally may be substituted with alkyl or aralkyl;

each occurrence of R^5 independently is H, alkyl, trifluoromethyl, aryl, heteroaryl, aralkyl, heteroaralkyl, cycloalkyl, heterocyclyl, fused cycloalkylaryl, or fused heterocyclylaryl,

further wherein said aryl, heteroaryl, aralkyl, heteroaralkyl, cycloalkyl, or heterocyclyl may be substituted with one or more halogen;

R^2 is alkyl, trifluoromethyl, alkoxy, aryl, heteroaryl, aralkyl, heteroaralkyl, or alkoxyaryl,

further wherein said alkyl, aryl, heteroaryl, aralkyl, and heteroaralkyl may be substituted with one or more of halogen, trifluoromethyl, or alkoxy;

B is C, N, or O, however, if B is O, then R^6 does not exist;

R^6 is H, alkyl, trifluoromethyl, aryl, heteroaryl, aralkyl, heteroaralkyl, cycloalkyl, heterocyclyl, further wherein said aryl, heteroaryl, aralkyl, heteroaralkyl, cycloalkyl, or heterocyclyl may be substituted with one or more halogen;

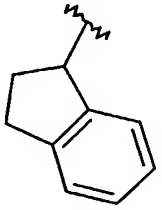
Y is C or N;

X is S, O, $N(R^5)$, $C(R^5)_2$, $S(O)_2$; and

n is 1, 2, 3, or 4.

30. The compound of claim 29 wherein Z is $-C(O)N(R^5)_2$, wherein one R^5 is H and one R^5 is fused cycloalkylaryl.

31. The compound of claim 30 wherein the fused cycloalkylaryl is

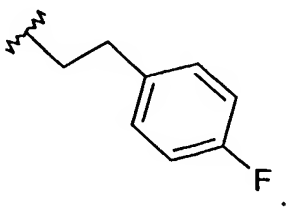


32. The compound of claim 29 wherein R^6 is H.

33. The compound of claim 29 wherein R^2 is aralkyl.

34. The compound of claim 33 wherein the aralkyl is further substituted with one or more halogen.

35. The compound of claim 34 wherein R^2 is



36. The compound of claim 29 wherein Y is C.

37. The compound of claim 29 wherein B is N.

38. The compound of claim 29 wherein X is $-C(R^5)_2-$, wherein each R^5 is H.

39. The compound of claim 29 wherein n is 1.

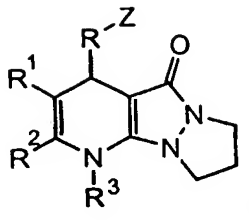
40. The compound of claim 29 wherein the compound is selected from the group consisting of:

(8b*S*)-*N*-[(1*R*)-2,3-dihydro-1*H*-inden-1-yl]-7-[2-(4-fluorophenyl)ethyl]-6,13-dioxo-5,8b,9,10,11,13-hexahydro-6*H*-benzo[*c*]pyrrolizino[2,1-*f*][2,7]naphthyridine-3-carboxamide; and

(8b*S*)-*N*-[(1*R*)-2,3-dihydro-1*H*-inden-1-yl]-7-(4-fluorobenzyl)-6,13-dioxo-5,8b,9,10,11,13-hexahydro-6*H*-benzo[*c*]pyrrolizino[2,1-*f*][2,7]naphthyridine-3-carboxamide.

41. The compound of claim 29 substantially as hereinbefore defined with reference to the Examples.

42. A compound of formula IV:



(IV)

including salts, solvates, and pharmaceutically functional derivatives thereof, wherein

R is aryl, heteroaryl, alkyl, or cycloalkyl,

Z is H, alkyl, halogen, $C(O)OR^5$, $C(O)N(R^5)_2$, $C(O)NHN(R^5)_2$, $NHC(O)N(R^5)_2$, $S(O)_2N(R^5)_2$, $CH_2NHC(O)R^5$, NO_2, $N(R^5)_2$, $NHC(O)R^5$, $N(R^5)S(O)_2N(R^5)_2$, OR^5, $CH_2N(R^5)_2$, $CH_2C(O)N(R^5)_2$, $CH_2C(O)OR^5$, heteroaryl, said heteroaryl optionally may be substituted with alkyl or aralkyl;

each occurrence of R^5 independently is H, alkyl, trifluoromethyl, aryl, heteroaryl, aralkyl, heteroaralkyl, cycloalkyl, heterocyclyl, fused cycloalkylaryl, or fused heterocyclylaryl,

further wherein said aryl, heteroaryl, aralkyl, heteroaralkyl, cycloalkyl, or heterocyclyl may be substituted with one or more halogen;

R^1 is H, alkyl, $C(O)OR^5$, $C(O)R^5$, $CON(R^5)_2$, CN, NO_2, $N(R^5)_2$, $S(O)_2R^5$, $S(O)_2N(R^5)_2$, $NHC(O)R^5$, $NHC(O)N(R^5)_2$,

further wherein R^5 is as defined above;

R^2 is alkyl, trifluoromethyl, alkoxy, aryl, heteroaryl, aralkyl, heteroaralkyl, or alkoxyaryl,

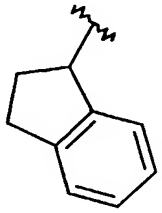
further wherein said alkyl, aryl, heteroaryl, aralkyl, and heteroaralkyl may be substituted with one or more of halogen, trifluoromethyl, or alkoxy; and

R^3 is H, alkyl, aralkyl, or heteroaralkyl.

43. The compound of claim 42 wherein R is phenyl.

44. The compound of claim 42 wherein Z is $-C(O)N(R^5)_2$, further wherein one R^5 is H, and the other R^5 is a fused cycloalkylaryl.

45. The compound of claim 44 wherein the fused cycloalkylaryl is:



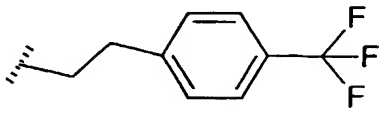
46. The compound of claim 42 wherein R^1 is $-C(O)OR^5$.

47. The compound of claim 46 wherein R^5 is ethyl.

48. The compound of claim 42 wherein R^2 is aralkyl.

49. The compound of claim 48 wherein the aralkyl is substituted with trifluoromethyl.

50. The compound of claim 49 wherein R^2 is:



51. The compound of claim 42 wherein R^3 is H.

52. The compound of claim 42 wherein the compound is selected from the group consisting of:

Ethyl 4-(4-{[(1*R*)-2,3-dihydro-1H-inden-1-ylamino]carbonyl}phenyl)-2-(4-fluorobenzyl)-5-oxo-1,5,8,9-tetrahydro-4H,7H-pyrazolo[1',2':1,2]pyrazolo[3,4-b]pyridine-3-carboxylate; and

Ethyl 4-(4-{[(1*R*)-2,3-dihydro-1H-inden-1-ylamino]carbonyl}phenyl)-5-oxo-2-{2-[4-(trifluoromethyl)phenyl]ethyl}-1,5,8,9-tetrahydro-4H,7H-pyrazolo[1',2':1,2]pyrazolo[3,4-b]pyridine-3-carboxylate.

53. The compound of claim 42 substantially as hereinbefore defined with reference to the Examples.

54. A pharmaceutical composition comprising:

a compound of claims 1 to 53; and

a pharmaceutically acceptable carrier.

55. A compound according to any of claims 1 to 53 for use as an active therapeutic substance.

56. A compound according to any of claims 1 to 53 for use in the treatment or prevention of diseases, disorders, or conditions mediated by calcitonin.

57. A compound of according to any of claims 1 to 53 for use in therapies for osteopenia and osteoporosis in men and women; reduction in the risk of fractures, both vertebral and nonvertebral; Paget's disease; bone fracture or deficiency; primary or secondary hyperparathyroidism; periodontal disease or defect; metastatic bone disorder; osteolytic bone disease; post-plastic surgery; post-prosthetic joint surgery; post-dental implantation; hypercalcemia; bone pain, general pain, and hyperalgesia; conditions associated with inhibiting gastric secretion; gastrointestinal disorders; osteoarthritis and rheumatoid arthritis; renal osteodystrophy; obesity by induction of satiety; and male infertility.

58. A compound according to any of claims 1 to 53 for use as a calcitonin mimetic.

59. Use of a compound according to any of claims 1 to 53 in the manufacture of a medicament for use in the treatment of osteopenia and osteoporosis in men and women; reduction in the risk of fractures, both vertebral and nonvertebral; Paget's disease; bone fracture or deficiency; primary or secondary hyperparathyroidism; periodontal disease or defect; metastatic bone disorder; osteolytic bone disease; post-plastic surgery; post-prosthetic joint surgery; post-dental implantation; hypercalcemia; bone pain, general pain, and hyperalgesia; conditions associated with inhibiting gastric secretion; gastrointestinal disorders; osteoarthritis and rheumatoid arthritis; renal osteodystrophy; obesity by induction of satiety; and male infertility.

60. A method of treating or preventing osteopenia and osteoporosis in men and women; reduction in the risk of fractures, both vertebral and nonvertebral; Paget's disease; bone fracture or deficiency; primary or secondary hyperparathyroidism; periodontal disease or defect; metastatic bone disorder; osteolytic bone disease; post-plastic surgery; post-prosthetic joint surgery; post-dental implantation; hypercalcemia; bone pain, general pain, and hyperalgesia; conditions associated with inhibiting gastric secretion; gastrointestinal disorders; osteoarthritis and rheumatoid arthritis; renal osteodystrophy; obesity by induction of satiety; and male infertility therapy comprising:

administering to a mammal in need thereof an effective amount of a compound of any of claims 1 to 53.